

## Telegram Development in Dokeos-Based E-Learning As a Learning Media to Improve Students' Motivation in Learning Physics

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### Abstract

Telegram Development in Dokeos-Based E-Learning as a Learning Media to Increase Students' Learning Motivation in Physics Subjects. The purpose of this study are to: (1) Determine the development of telegram in Dokeos-based e-learning as a learning media to increase students' motivation in physics subjects. (2) Analyse the effect of Telegram development learning media on dokeos-based e-learning to students' motivation. (3) Know the practicality of telegram learning media on dokeos-based e-learning according to the students. (4) Know the practicality of telegram learning media on dokeos-based e-learning according to the teacher. The type of this research is Research and Development (R&D). The results showed that: (1) Telegram learning media on dokeos-based e-learning were developed through seven stages, namely: needs and literature analysis, product design, product development, small-scale trials, product revisions, large-scale trials, and the final product. The learning media developed at the "AKPELNI" Semarang Sailing Vocational School presents physics material in Class X Nautika. (2) The learning media is feasible to be used in the Semarang "AKPELNI" Sailing Vocational School on Class X Nautika students. The feasibility of instructional media based on material experts included in the category strongly agreed with an average score of 87.5, while based on the media experts included the category strongly agreed with the average score of each indicator 85.71, based on the practicality of the media by students included in the high category that was a mean score of 3.36 out of 27 students, while based on the practicality of the media by teachers also a high category of 3.47 out of 2 physics teachers. (3) The use of telegram learning media on Dokeos-based e-learning is considered effective for increasing student motivation. This is proved by the increase of the average score in the N-Gain about 0.8, which includes in the high category.

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## INTRODUCTION

Along with the science and technology development, increasingly encouraging renewal efforts in the use of technological results in learning process (Akbar, 2012). The development of information technology can improve performance and enable activities to be carried out quickly, precisely and accurately, thus, resulting to a high productivity. A learning process will be done effectively if it is use proper and appropriate learning models, but a learning process will be done more effectively if it is accompanied by technology or tools to convey information which is called as learning media (Sofiani & Shavab, 2018). Sinaga., Et al (2014) in teaching the concepts of physics the majority of high school physics teachers teach with text representation and mathematical equations models, besides that physics teachers do not prepare teaching materials that are appropriate to the characteristics of students and students' learning difficulties.

The success or failure of achieving educational goals depends a lot on how the learning process experienced by the students. The learning process is very much influenced by the motivation to learn. It means that with "high motivation to learn, students will be able to achieve optimal self development in learning achievement which is one of the main goals in learning" (Sardiman, 2011).

One of the things that affects student motivation is learning media. The learning media referred to in this study is e-learning learning media (Suwastika, 2018). Research from Ida (2016) states that learning by using moodle software e-learning can achieve effective learning and motivate student learning. Motivation can be stimulated by outside factors and it can be grow within a person. Learning motivation is a psychological factor that is non-intellectual. His distinctive role can bring passion, happiness and motivation for learning. Students who have strong motivation, will have a lot of energy to engage in learning activities.

Utilization of technology and information in education world can be used in Physics subjects, like in terms of presenting microscopic study objects that cannot be reached by the five human senses. According to Sinaga., Et al (2014)

in teaching physics concepts the majority of high school physics teachers teach with a text representation and mathematical equations model, besides that physics teachers do not prepare teaching materials that are appropriate to student characteristics and student learning difficulties. Making learning media in accordance with students' level of thinking makes students able to understand the material quickly, and it can be repeated when they are at home, so they are motivated to learn (Putri, 2013: 20). According to Adegoke (2011), multimedia can also improve student learning outcomes.

This is in accordance with Sadiman's statement (2011); the benefits of learning media in student learning processes are: (1) Learning will attract more students' attention so that it can foster motivation to learn; (2) the learning material will be clearer so that it can be better understood by the students and enable them to master and achieve the learning objectives; (3) teaching methods will be more varied, not merely verbal communication through teacher regulations so students do not feel bored; (4) students can do more learning activities because they are not only listening to the teacher's description, but also doing other activities, such as observing, demonstrating, acting, and others.

E-learning has benefits for educational institutions to attract more students than the conventional learning methods. E-learning is also easy to develop / use without having to master web design and database design techniques (Yuni & Sunarmi, 2013). One characteristic that appears in e-learning is independent learning. Students are demanded to be able to manage their own learning processes better, including managing their own environment, motivating, increasing knowledge independently, proactively and thoughtfully because the core of independent learning is self-motivation (Saba, 2012).

Dokeos is an e-learning tool for web-based applications. Dokeos has various advantages because besides being open source, Dokeos is also web-based, making it easy to use in several system environments. Dokeos as an LMS (Learning Management System), already has many services that support the needs of virtual classrooms, including the delivery of new material or delivery of assignments to students. But in the notification

document if there is new material or a new assignment can only be known by students when they are logged in. For this reason, this study will integrate telegram into dokeos-based e-learning. In Hardyanto & Sugianto's research (2005: 425) that web-based learning can make students feel happy to use the program, and desires to develop the program.

Based on interviews with several physics teachers obtained information that the learning media used by the teacher were still limited in the form of PowerPoint slides and the implementation of learning in the form of group discussions. In addition, physics subjects are often off (students study independently at home) because of many ineffective weeks. So that students' learning motivation is extremely lack. Student motivation can be improved by using information and communication technology (Srinadi, 2015). With motivation, students can develop activities and initiatives, and also direct and maintain perseverance in conducting learning activities (Surahmadi, 2016). Based on this fact, the researchers conducted research based on the development of a learning media that is easy to use by teachers and students to replace learning in the classroom.

This fact encourages the teacher to look for the best solution so students can understand physics material properly and correctly. The e-learning media is expected to be an alternative in more meaningful learning including independent learning systems.

## METHOD

The research method used in this research is Research and Development (R&D). Research and Development is a research method used to develop certain products or perfect existing products (Putra, 2015). The product developed is not only in the form of hardware such as books and modules but it can also be in the form of software. Nana (2009) defining research and development as a research approach to produce new products or improve existing products. So development research is a method for producing certain products or perfecting existing products and testing the effectiveness of those products. The products developed are dokeos-based e-

learning media that are integrated with telegrams in physics material. The research design used in this study according to Borg and Gall (in Emzir, 2013) includes: (1) analysis of needs and literature, (2) product design, (3) product development, (4) small-scale trials, (5) product revisions, (6) large-scale trials, (7) final products.

## Research Procedure

### 1) Analysis of Needs and Literature

The study was conducted in class X "AKPELNI" Vocational School Semarang. Many weeks are ineffective in this semester, especially in physics subjects and students' learning motivation is lack. The existence of such a thing requires learning media that can complement the learning process that is easily accessed by teachers and students. Then made a learning media in the form of telegram on e-learning based Dokeos for alternative learning media so that learning can still be deliver even if it is not in the classroom.

### 2) Product Design

At this stage the product developed by the researcher is integrating telegram with dokeos, where the telegram is a tool to receive message notifications from dokeos by utilizing existing telegram bot. The tools used to create media are PHP, xampp, and MySQL. Menu used in social media include: agenda / calendar, announcements, documents, links, forums, dropboxes, groups, chat, publications, tracking. The document menu contains simulation, animation and video material that can be viewed and studied by downloading it first. Quizz menu contains questions for student practice and students can immediately see the grades right after completing all the questions.

### 3) Product Development

Making telegram on dokeos-based e-learning can be done online or offline. Before being tested on students, the product must pass the validation stage by the validator first. Validation performed by the validator is used to correct the weaknesses and feasibility of the product that being developed.

### 4) Small Scale Trial

A small-scale trial was conducted on 10 Engineering class students who had got physics material. Small-scale trials are used to find out

whether students can use telegram media on dokeos-based e-learning properly or not.

#### 5) Product Revision

The results of small-scale trials in the form of a media practicality questionnaire assessment done by the teachers and students are analyzed and used to correct weaknesses regarding the product that being developed so that it can be used for the large-scale trials.

#### 6) Larger Scale Trial

A large-scale trial was conducted on 27 students from class X Nautika of "AKPELNI" Semarang Sailing Vocational School who had already received physics material. Large-scale trials using in a one-shot case study design. In this study, there was no control group and students were given special treatment or teaching for some time. The subjects in this study received treatment (the use of learning media). The product developed is a web-based learning media in the form of telegram on dokeos-based e-learning. Then at the end of learning students are given a test in the form of a questionnaire related to the feasibility of the media used and student motivation. Table 1 is a one-shot case study design.

**Table 1** One-shot case study design

Subjek	Treatmen	Test
1 kelompok	X	T

Keterangan :

X : *Treatment* done by using *telegram* on *Dokeos-e-learning*.

T : Test in the form of student learning motivation questionnaire after being given treatment (*treatment*).

#### 7) Final Product

From the results of small and large scale trials obtained a telegram learning media product on dokeos-based e-learning.

## RESULT AND DISCUSSION

The first phase of needs and literature analysis is done to the physics teacher at the "AKPELNI" Semarang Sailing Vocational School. The analyses is done by using questionnaires with answers to free descriptions then answers confirmed by interviews with the teacher concerned. The outline of the questions

includes: teacher analysis, student analysis and analysis of the media learning needs of physics subjects in class X. Physics subjects are subjects that are often off due to holiday; many weeks are not effective on these subjects. In addition, based on the results of student analysis done by teachers, it is obtained that students' learning motivation in learning physics is still lacking. The existence of such a thing requires learning media that can replace the learning process in the classroom that is easily accessible by the teacher and students. Therefore, a learning media will be made in the form of telegram on dokeos e-learning as an alternative learning media for physics in class X so that learning can continue even if not in class.

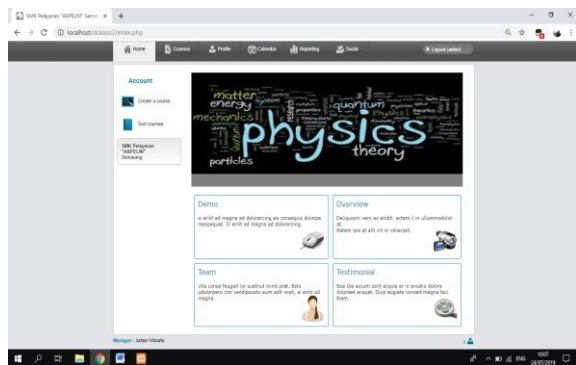
Based on the media needs analysis conducted by physics teachers at the "AKPELNI" Sailing Vocational School Semarang, it was found that physics does indeed require a learning media in which the learning process can still be deliver even though it is limited by space and time. Therefore, this Dokeos-based e-learning media can be a complement to the learning process in the classroom, so it is not bound by space and time, and learning process can be done anytime and anywhere.

Apart from that, the analysis was also carried out on the learning media used namely dokeos. Dokeos is a great system for learning, flexible and easy to use. Dokeos is written in PHP and uses a MySQL database. Dokeos allows the teachers to create, organize and display their classes through the web. Students can attend classes, read the contents of the material, or actively participate in the class through groups, forums and chat.

Whereas it turns out that on dokeos, students can only find out if there is a new material or a new assignment posted by the teacher when they have logged into the dokeos. So there is a need for new innovations so that dokeos can be a useful application in learning systems today, namely by integrating it with telegram as a notification when there is a new notification from the teacher to the students.

The second stage, which is the product design results, is a doceos-based e-learning design stage that is integrated with telegrams on physics material based on the results of needs analysis and literature from the previous stage. Based on this

analysis, the design for learning media that is suitable with the needs of the school is obtained. The development of dokeos-based e-learning is complemented by the menus in the courses at the top or bottom of the learning media. The menu button contains several documents, videos, simulations, quizzes, the results of student discussions with other students or students with teachers and the student score. The initial display design of the learning media is presented in Figure 1 below.



**Figure 1.** Initial Display Desain of the Learning Media

The third stage after the design of integrated dokeos products with telegram, then the validation test of the product is carried out. Validation test is done to get a valid product design that is suitable as a learning media both in terms of material and the design of the media display. The validity of learning media is obtained from the assessment of media experts and material experts.

The results of the validity assessment from media experts and material experts is used as one of the references to obtain validity of the teaching materials and media developed. During product design validation, media experts and material experts provide some positive feedback. Input from experts is then used as material to improve learning media products. The results of the validation assessment of media experts are presented in Table 2 below.

**Table 2.** Results of Media Expert Validation

Aspects	Score
The suitability of the material with the learning objectives	81.25
The use of language	87.5
The content	81.25
Software engineering	93.75

Writing	87.5
Display	87.5
Presentation	81.25
The average score	85.71

From the evaluation results of the media expert validator, it is obtained the average score for all aspects is 85.71 which is included in the strongly agree criteria. It means that the dokeos-based e-learning learning media product is integrated with a valid telegram so that it is feasible for the next stages. The results of material expert validation are presented in Table 3 below.

**Table 3.** The validation results of material expert

Aspect	Score
Coverage and Depth Material	100
The order and systematic presentation of the material for achieving competence.	75
Availability of images and videos that support the material	75
Language used in communicative learning materials.	75
Consistency relationship between material and learning objectives.	100
Ease of students in understanding the description of the material and concepts provided.	75
The terms used in accordance with the area of study.	100
Conformity of material coverage with available time allocation.	100
Compatibility of learning material with the characteristics of Vocational High School students	75
The relationship between material and the surrounding environment	100
Rata-rata nilai	87.5

From the results of the material expert validator's evaluation, the average value obtained for all aspects was 87.5 which included in the strongly agree category. It means that the Dokeos-based e-learning media product that is integrated with a telegram is valid, so it makes it feasible for the next stage.

The fourth stage of small-scale trials on students obtained an average practicality score of 3.27 out of 10 students. The score is included in the high category, it means that this product is practical in its use by the students so that the

product can be used for the large-scale trial phase. trial category done by students are presented in Details of practicality scores for each small-scale Figure 2 below.

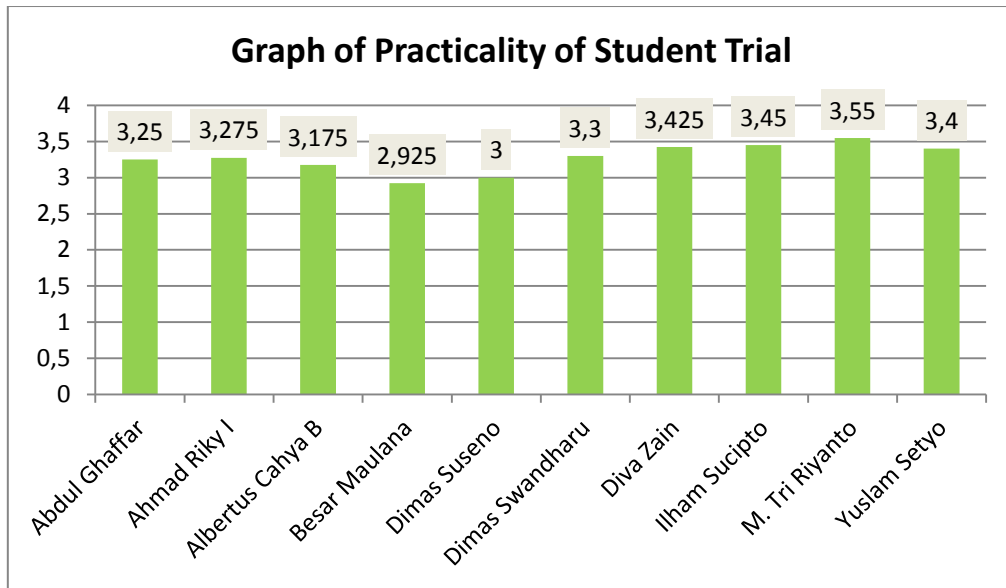


Figure 2. Details of each score by the students

While practicality by two physics teachers, gained a score of 269. The score is included in the high category so that the telegram in dokeos-based e-learning can be used as a learning media for physics subjects. Details of practicality scores for each category by the teacher are presented in Figure 3 below.

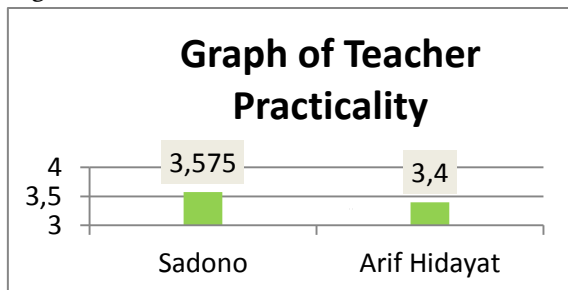


Figure 3. Details of practicality scores by the teacher

The fifth stage of validating product design. material experts and media experts provide some positive input. Some of the input is a matter of multiple choice can be developed into true or false answers or short answers and the front page design is made more simple and attractive. Input from the experts is then used as material to improve learning media products. The final design of the media is presented in Figure 4 below.

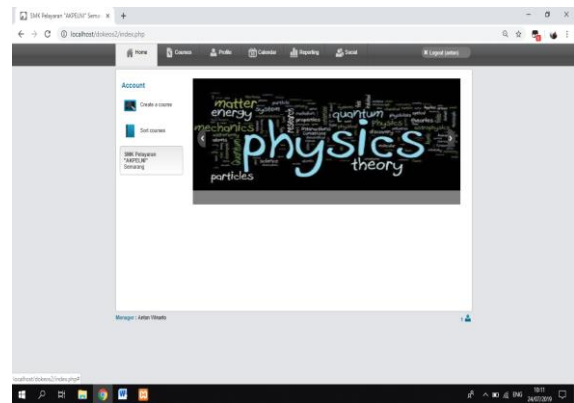
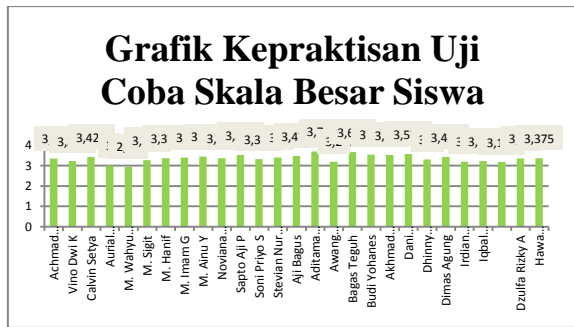


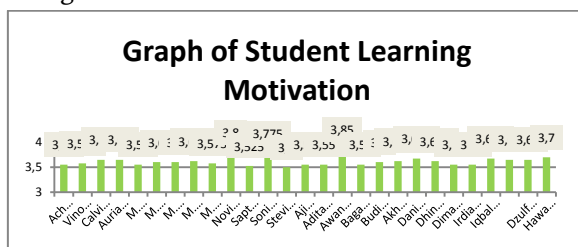
Figure 4. Final Design of the learning media

The sixth stage of the student's large-scale trial. gained the average practicality score about 3.36 in the high category and the score of the number of students' motivation from the N-Gain test was 0.8. The score is included in the high category. so that the telegram learning media based on dokeos can be used as a learning medium for physics class X Nautika Sailing Vocational School "AKPELNI" Semarang to increase student motivation. The details of the media practicality score done by the students are presented in Figure 5 below.



**Figure 5.** Details of the media practicality score done by the student

While the details of students' learning motivation scores for each category are presented in Figure 6 below.



**Figure 6.** Details of students' learning motivation scores

The seventh stage of the small and large scale trials obtained a telegram learning media product on dokeos-based e-learning. After learning physics. then an analysis of students' learning motivation is carried out. which is information that students' learning motivation increases from before using learning media to after learning from the N-Gain test results. from 0.8 in the high category. This shows that the telegram learning media on dokeos-based e-learning can be used as an alternative learning media to increase student motivation.

## CONCLUSION

From the results of the Telegram development on dokeos-based e-learning as a physics learning media for physics material in class X. it can be concluded that the teacher and students responded positively to the learning media developed through the practicality of the media analysis with an average score of 3.48 from 2 teachers included in the high category. and the average score of 3.36 out of 27 students included in the high category. Student learning motivation increased seen from the N-Gain test results about

0.8 in the high category after using learning media.

## SUGGESTIONS

This research is a development of temperature and heat learning media in dokeos-based e-learning that is integrated with telegram. This research needs to be followed up so the researcher give following suggestion:

1. This research is only limited to producing learning media on physics subjects. So that further research is recommended with other subjects other than physics.
2. This research brings a very positive response from both the teacher and students. Therefore. it is recommended for teachers to use the media in the learning process. so that learning can be conducted by students anytime and anywhere without being bound by time and space.

Products that are developed only used in one class (course). So it is suggested that the teacher or researcher develop this product further in several classes (courses).

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